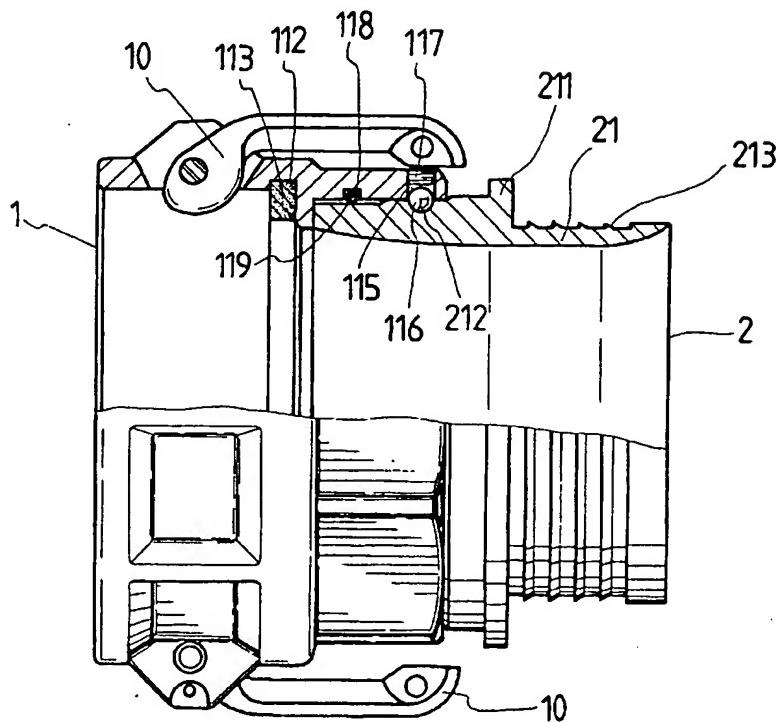




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**(54) RACCORD ROTATIF DE CONDUITE**  
**(54) ROTARY PIPE CONNECTOR**



(57) A rotary pipe connector includes a first connector member fastened to a liquid reservoir fitting, a second connector member fastened to a liquid delivery means and inserted into the first connector member, a plurality of steel balls inserted through a radial screw hole at the first connector member into matched annular ball grooves between the inside wall of the first connector member and the outside wall of the second connector member to secure the first connector member and the second connector member together, for permitting the second connector member to be rotated with the liquid delivery means in the first connector member, and a screw rod threaded into the radial screw hole to stop the steel balls in the annular ball grooves.

**ABSTRACT OF THE DISCLOSURE**

A rotary pipe connector includes a first connector member fastened to a liquid reservoir fitting, a second connector member fastened to a liquid delivery means and inserted into the first 5 connector member, a plurality of steel balls inserted through a radial screw hole at the first connector member into matched annular ball grooves between the inside wall of the first connector member and the outside wall of the second connector member to secure the first connector member and the second connector 10 member together, for permitting the second connector member to be rotated with the liquid delivery means in the first connector member, and a screw rod threaded into the radial screw hole to stop the steel balls in the annular ball grooves.

**What the invention claimed is:**

1. A rotary pipe connector comprising
  - a first connector member fastened to a liquid reservoir fitting, said first connector member comprising an inside wall defining an axially extended center through hole, an inside annular flange raised around the inside wall within said center through hole, an annular ball groove provided around the inside wall within said center through hole in parallel to said inside annular flange, a radial screw hole extended from the annular ball groove of said first connector member to the outside of said first connector member;
  - a second connector member fastened to a liquid delivery means and coupled to the center through hole of said first connector member, said second connector member comprising a collar raised around and outside wall thereof, an annular ball groove provided around the outside wall and matched with the annular ball groove at the inside wall of said first connector member; and
  - a plurality of steel balls inserted through said radial screw hole at said first connector member into the annular ball grooves of said first connector member and said second connector member to secure said first connector member and said second connector

member together, for permitting said second connector member to be rotated with the liquid delivery means in said first connector member.

2. The rotary pipe connector of claim 1 wherein said first connector member comprises a plurality of inside annular grooves provided around the inside wall thereof, and a plurality of O-rings respectively mounted in the inside annular grooves within said first connector member around the outside wall of said second connector member.

10 3. The rotary pipe connector of claim 1 wherein said first connector member further comprises a gasket ring mounted in an inside annular groove thereof and stopped at one side of said inside annular flange opposite to said first connector member.

4. The rotary pipe connector of claim 1 further comprising a screw rod threaded into the screw hole at said first connector member to stop said steel balls in said annular ball grooves between said first connector member and said second connector member.

## ROTARY PIPE CONNECTOR

### BACKGROUND OF THE INVENTION

#### (a) Field of the Invention:

The present invention relates to a pipe connector, and more particularly to a rotary pipe connector for securing a pipe to a liquid reservoir fitting for permitting the pipe to be rotated through 360° relative to the liquid reservoir fitting.

#### (b) Description of the Prior Art:

Regular rubber hoses are intensively used in oil and chemical delivery vehicles, pumbers, gasoline pumps, movable water pumps, etc. for delivering oil, liquid chemicals, gasoline or water. When connecting a rubber hose to a vehicle, pumber, gasoline pump or water pump, a pipe connector shall be used. When a pipe connector is fastened to a rubber hose and installed in a vehicle, pumber, gasoline pump or water pump, the rubber hose cannot be freely rotated relative to the vehicle, pumber, gasoline pump or water pump. If the rubber hose is twisted, the hose body of the rubber hose is forced to deform, causing the liquid delivery efficiency to be affected (see Figure 1). Further, frequently twisting the rubber hose may cause the hose body to break, causing a leakage. It is dangerous when a liquid chemical leaks out through a crack in the rubber hose of a chemical delivery vehicle.

## SUMMARY OF THE INVENTION

The present invention provides a rotary pipe connector for securing a pipe to a liquid reservoir fitting for permitting the pipe to be rotated through 360° relative to the liquid reservoir fitting.

- 5    A rotary pipe connector according to the preferred embodiment of the present invention is comprised of a first connector member fastened to the pipe, and a second connector member fastened to the machine fitting and inserted into a center through hole at the first connector member and stopped at an inside annular flange
- 10    inside the first connector member. A plurality of steel balls are inserted through a radial screw hole at the first connector member into matched annular ball grooves between the inside wall of the first connector member and the outside wall of the second connector member to secure the second connector member to the
- 15    inside of the first connector member, for permitting the second connector member to be rotated with the connected pipe in the first connector member.

## BRIEF DESCRIPTION OF THE DRAWINGS

- Figure 1 is an applied view of a pipe connector according
- 20    to the prior art.

Figure 2 is an exploded view of a pipe connector according to the present invention.

Figure 3 is a sectional assembly view of the pipe connector shown in Figure 2.

Figure 4 is a cross sectional view of the present invention showing the steel balls installed in the annular ball grooves 5 between the inside wall of the first connector member and the outside wall of the second connector member.

Figure 5 is an applied view of the present invention, showing the second connector member rotated in the first connector member.

#### 10 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to Figure 2, a rotary pipe connector in accordance with the present invention is comprised of a first connector member 1, and a second connector member 2.

Referring to Figures from 3 through 5 and Figure 2 again, 15 the first connector member 1 comprises an axially extended center through hole 11, an inside annular flange 111 raised around the inside wall thereof within the center through hole 11, an annular ball groove 114 provided around the inside wall within the center through hole 11 in parallel to the inside annular flange 111; a radial screw hole 15 extended from the annular ball groove 114 to the periphery, a set of steel balls 116, which are inserted through the 20 radial screw hole 15 into the annular ball groove 114 after the first

connector member 1 and the second connector member 2 have been connected together, a screw rod 177 for threading into the screw hole 15 to stop the steel balls 116 in the annular ball groove 114, a plurality of inside annular grooves 118 provided around the inside 5 wall within the center through hole 11 in parallel to the annular ball groove 114 and the inside annular flange 111, and a plurality of O-rings 119 respectively mounted in the inside annular grooves 118. When the second connector member 2 is inserted into the center through hole 11 of the first connector member 1, the O-rings 10 119 seal the gap. The second connector 2 is a cylindrical device comprising a collar 211 raised around the outside wall 21 thereof, an annular ball groove 212 provided around the outside wall 21 at one side of the collar 211 corresponding to the annular ball groove 114 at the first connector member 1 for receiving the steel balls 116, 15 and a plurality of positioning flanges 213 raised around the outside wall 21 at an opposite side of the collar 211 and sloping upwardly forwards toward the collar 211 for securing a hose 3 to the second connector member 2 (see Figure 5). Alternatively, the outside wall 21 can have a plain surface for the mounting of a metal pipe by 20 welding.

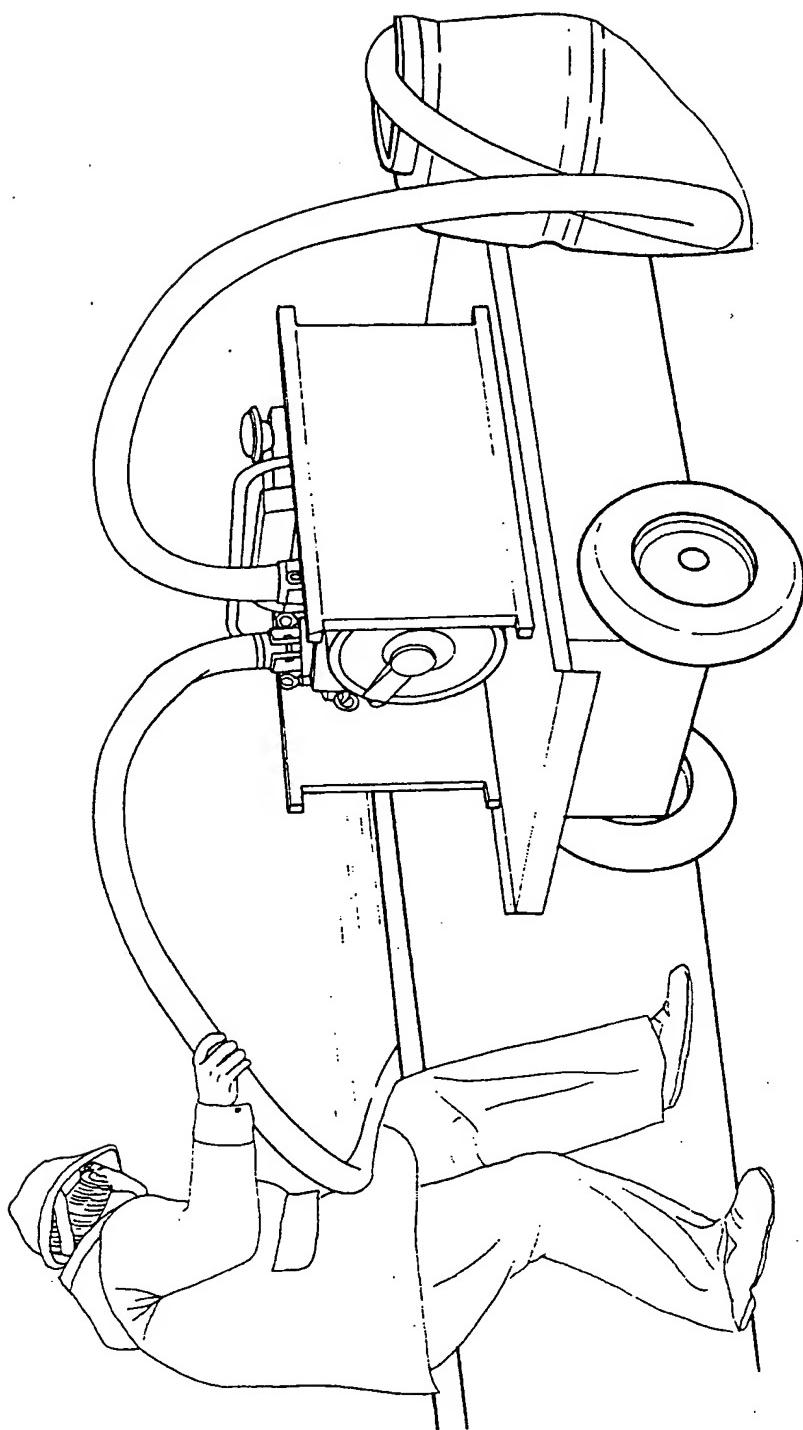
Referring to Figures from 2 through 5 again, when the second connector member 2 is inserted into the center through hole

11 of the first connector member 1 and stopped at the inside annular flange 111. the annular ball grooves 114;212 are matched together, and the gap between the inside wall of the first connector member 1 and the outside wall of the second connector member 2  
5 are sealed by the O-rings 119. After the installation of the second connector member 2 in the first connector member 1, the steel balls 116 are inserted into the annular ball grooves 114,212, and then the screw rod 117 is threaded into the radial screw hole 115 to stop the steel balls 116 in the annular ball grooves 114,212. When  
10 assembled, the second connector member 2 can be rotated in the first connector member 1 through 360° (see Figure 5).

Referring to Figures 2, 3 and 5 again, two lock levers 10 are bilaterally pivoted to the first connector member 1 for quickly securing the first connector member 1 to a fitting being inserted  
15 into the first connector member, and a gasket ring 113 is mounted inside the first connector member 1 and stopped at the inside annular flange 111 at one side opposite to the second connector member 2 to prevent a leakage after the installation of the fitting in the first connector member 1.

20 While only one embodiment of the present invention has been shown and described, it will be understood that various modifications and changes could be made thereunto without

departing from the spirit and scope of the invention disclosed.



**FIG. 1 PRIOR ART**

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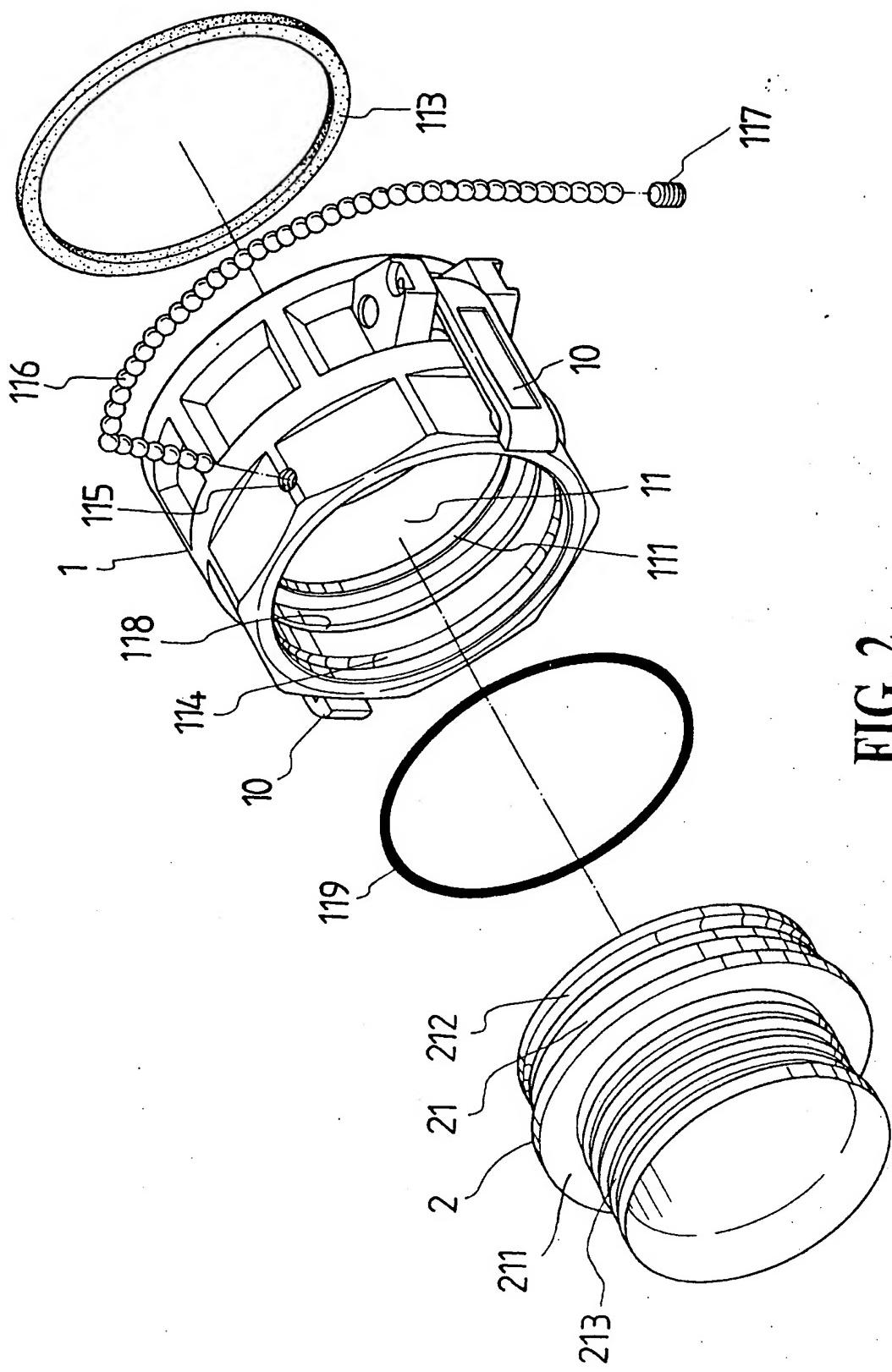


FIG. 2

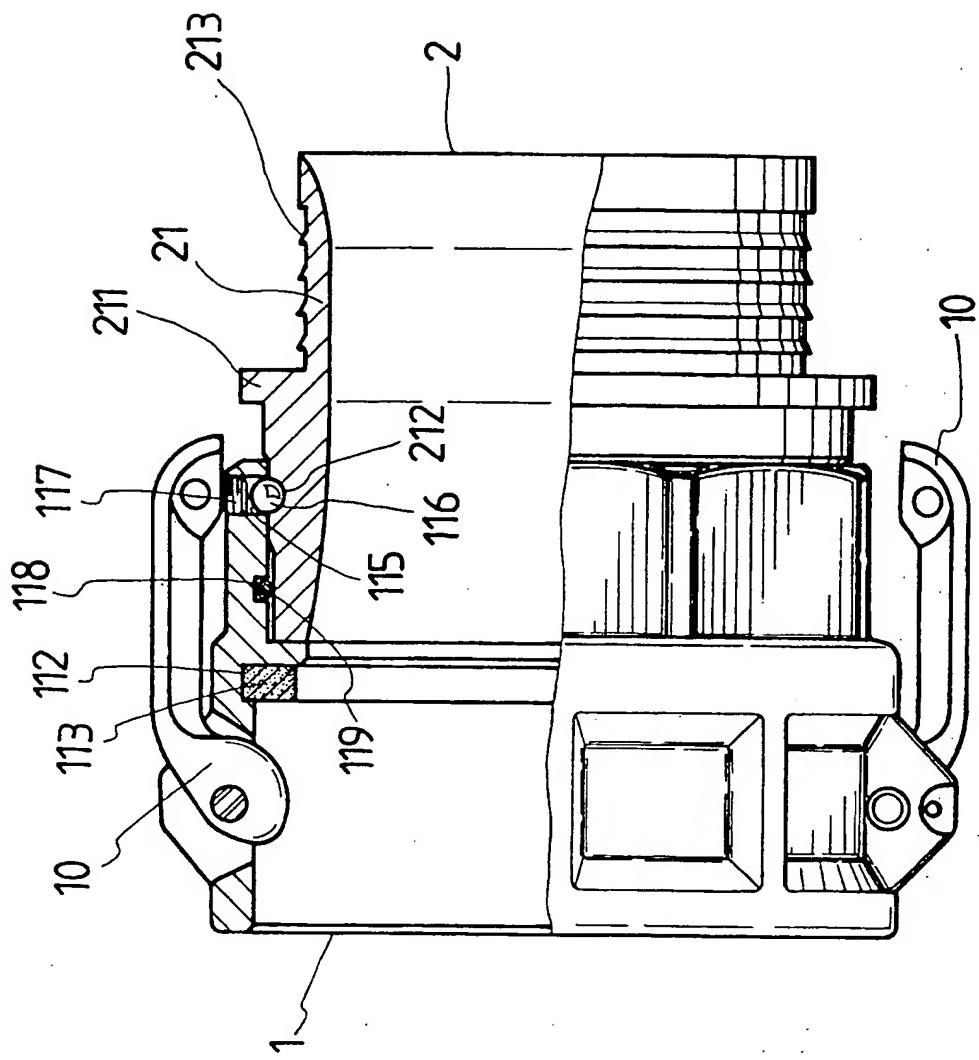


FIG. 3

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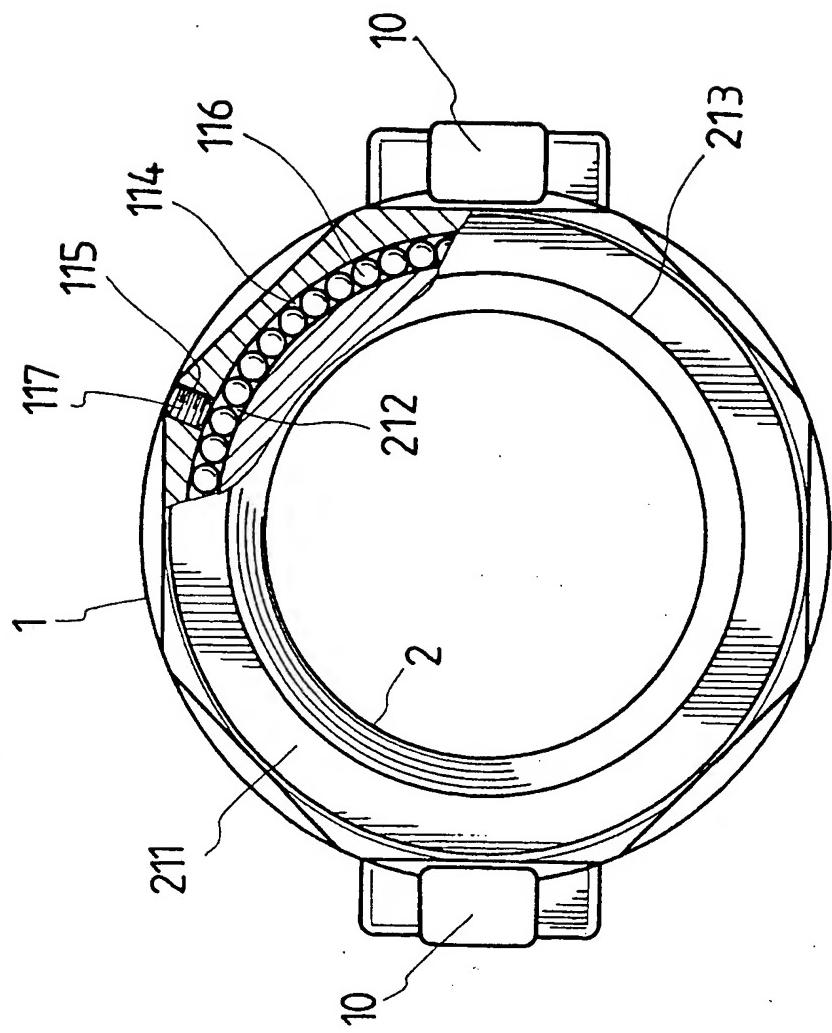


FIG. 4

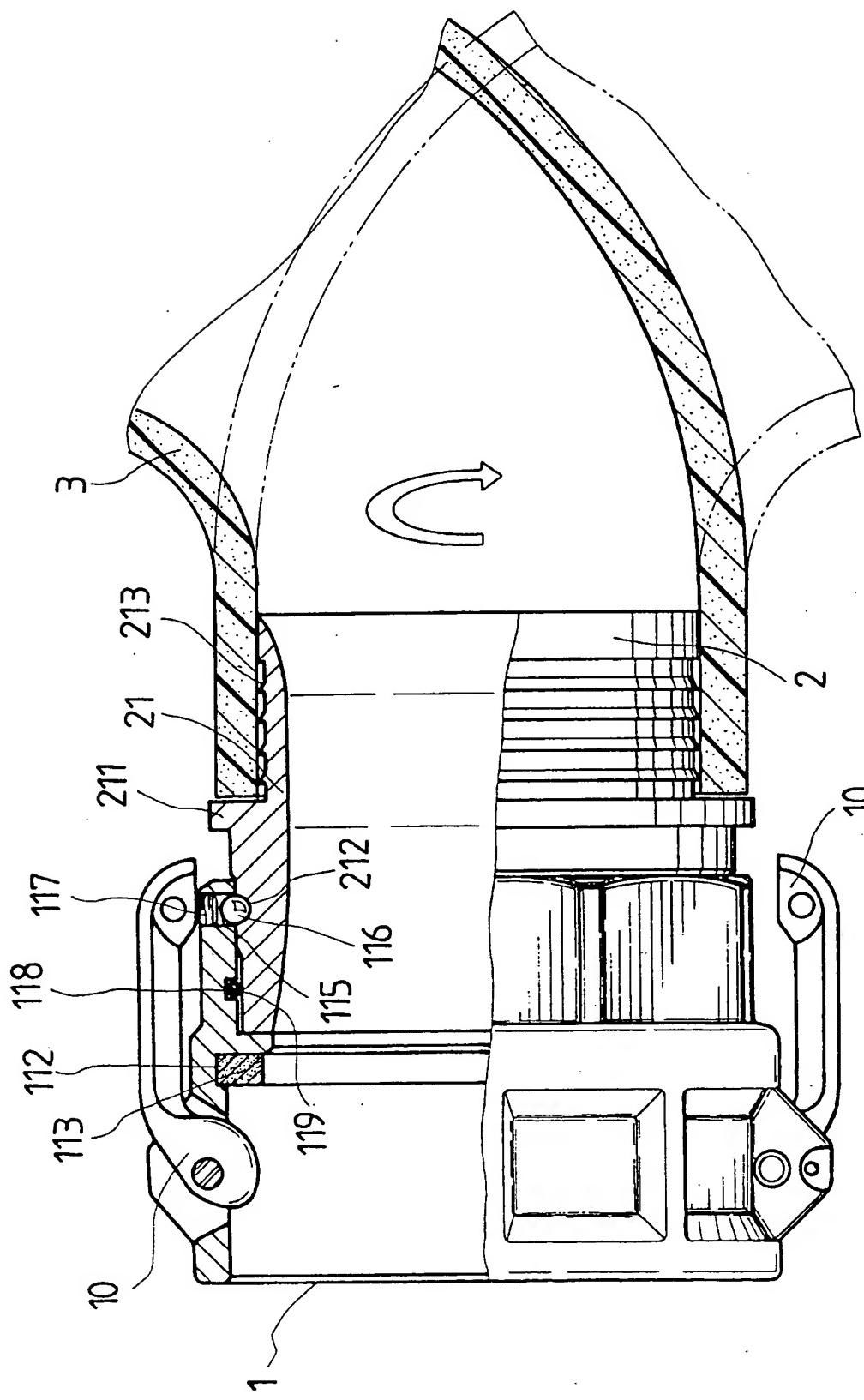
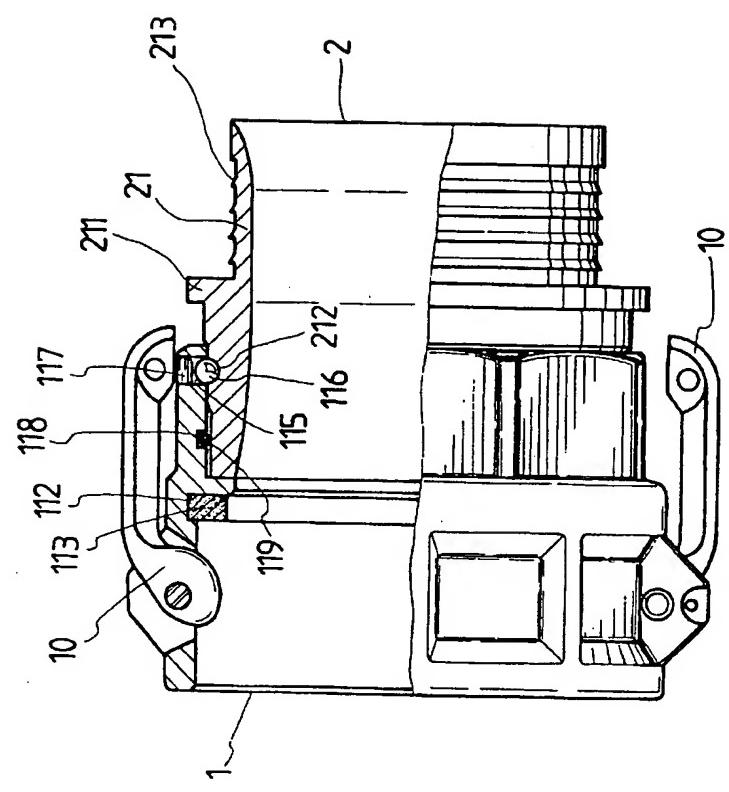


FIG. 5



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